WHAT IS CLAIMED IS:

1. In a system for controlling braking of an aircraft during landing, said system including wheel velocity signal generating means for producing a wheel velocity signal that is a function of the rotational speed of a wheel and an associated tire of the aircraft, and means for applying a command brake pressure to a wheel brake of the aircraft, the improvement comprising:

velocity reference generator for generating a reference velocity signal indicating a desired reference velocity;

aircraft velocity comparison means for comparing said wheel velocity signal with said reference velocity signal for generating a velocity error signal indicative of the difference between said aircraft wheel velocity signal and said reference velocity signal;

an optimal brake controller for generating an optimal brake pressure control signal for the wheel of the aircraft to cause the aircraft wheel velocity to converge to said reference velocity, based upon an estimated command brake pressure and an estimated value of a fictitious coefficient of friction between the tire and runway surface;

a pressure bias modulator integrator responsive to said wheel velocity signal and said reference velocity signal to provide an antiskid control signal; and

means for summing said optimal braking command signal and said antiskid control signal to produce said command brake pressure signal.

2. The system of Claim 1, wherein said optimal brake controller comprises a discrete Kalman regulator for determining the estimated command brake pressure and the estimated value of the fictitious coefficient of friction between the tire and runway surface.

3. The system of Claim 2, wherein said discrete Kalman regulator comprises a control feedback gain matrix and a Kalman filter, said Kalman filter receiving said velocity error signal and a brake torque feedback signal, and said Kalman filter generating an estimated velocity error signal and an estimated brake pressure, and said control feedback gain matrix receives said estimated velocity error signal and said estimated brake pressure to generate said estimated command brake pressure and the estimated value of the fictitious coefficient of friction between the tire and runway surface.

4. The system of Claim 2, wherein said optimal brake controller determines said optimal brake pressure control signal based upon the estimated value of the fictitious coefficient of friction, the weight per wheel, the rolling radius of a tire, the reciprocal of the torque vs. pressure ratio, and said estimated command brake pressure.

5. The system of Claim 1, wherein said wheel velocity signal generating means comprises a wheel speed filter for generating a filtered wheel velocity signal based upon said wheel velocity signal.

6. In a method controlling braking of an aircraft during landing, the method including the steps of generating a wheel velocity signal that is a function of the rotational speed of a wheel and an associate tire of the aircraft, and applying a command brake torque signal based upon a command brake pressure to the wheel brake of the aircraft, the improvement in the method comprising the steps of:

generating a reference velocity signal indicating a desired reference velocity;

comparing said wheel velocity signal with said reference velocity signal for generating a velocity error signal indicative of the difference between said aircraft

wheel velocity signal and said reference velocity signal;

generating an optimal brake pressure control signal for the wheel of the aircraft to cause the aircraft wheel velocity to converge to said reference velocity, based upon an estimated command brake pressure and an estimated value of a fictitious coefficient of friction between the tire and runway surface;

providing an antiskid control signal; and

summing said optimal braking command signal and said antiskid control signal to produce a command brake pressure signal.

7. The method of Claim 6, wherein said step of generating an optimal brake pressure control signal comprises determining the estimated command brake pressure and the estimated value of the fictitious coefficient of friction with a discrete Kalman regulator.

8. The method of Claim 7, wherein said discrete Kalman regulator comprises a control feedback gain matrix and a Kalman filter, said Kalman filter receiving said velocity error signal and a brake torque feedback signal, said Kalman filter generates an estimated velocity error signal and an estimated brake pressure, and said control feedback gain matrix receives said estimated velocity error signal and said estimated brake pressure to generate said estimated command brake pressure and the estimated value of the fictitious coefficient of friction between the tire and runway surface.

9. The method of Claim 7, wherein said step of determining said optimal brake pressure control signal is based upon the estimated value of the fictitious coefficient of friction, the weight per wheel, the rolling radius of a tire, the reciprocal of the torque vs. pressure ratio, and said estimated command brake pressure.

10. The method of Claim 6, wherein said step of generating a wheel velocity signal comprises filtering the wheel velocity signal to generate said filtered wheel velocity signal.